IN THE CLAIMS:

1. (Currently Amended) A method for sensing a temperature of a device, that comprises:

establishing a programmable current for an on-chip current source;

sensing a ~~temperature-dependant~~ temperature-dependent voltage that is based on a temperature dependent resistive ~~device~~ component and the programmable current, wherein the temperature-dependent voltage is maintained within a predetermined range, and wherein the temperature dependent resistive ~~device~~ component is thermally coupled to the device;

converting the temperature-dependant voltage to a digital value; and

equating the digital value to the temperature of the device.

2. (Original) The method of claim 1 further comprises adjusting the programmable current such that the temperature-dependent voltage is within a predetermined range of values for converting the temperature-dependent voltage into the digital value, wherein the equating of the digital value is further based on the adjusting of the programmable current.

3. (Currently Amended) The method of Claim 1, wherein the temperature dependent resistive ~~device~~ component comprises a thermistor.

4. (Original) The method of claim 1, wherein the equating the digital value to the temperature of the device further comprises determining the temperature of the device from a table relating digital values to temperatures.

5. (Currently Amended) The method of claim 1, wherein the devices comprises an off-chip device, and wherein equating the digital value to the temperature of the off-chip device further comprises calculating the temperature of the off-chip device with a predetermined function wherein the temperature is a function of:

at least one property of the programmable current;

a digitized voltage; and

a set of physical properties of the temperature dependent resistive device.

6. (Currently Amended) The method of Claim 5, wherein:

the temperature dependent resistive ~~device~~ component comprises a thermistor; and

the predetermined function comprises the equation:

Temp=[1/((ln(Index/(16*Ro))/Beta)+0.00336)]-273

wherein:

Temp is the Temperature of the Off-Chip Device in Celsius;

Index is a digital value derived from the digitized voltage and the programmable current;

Ro is a resistance of the thermistor in KILOOHMS at 298K

Beta is a thermistor value.

7. (Original) The method of claim 1 further comprises:

increasing the programmable current when the digital value decreases below a lower threshold value; and

decreasing the programmable current when the digital value increases above an upper threshold value.

8. (Currently Amended) The method of Claim 1, wherein the devices comprises an off-chip device, and wherein the off-chip device comprises at least one of:

a hard drive and a battery.

9. (Original) The method of Claim 8 further comprises, when the device is a battery, controlling a battery charge function based on the temperature of the battery.

10. (Original) The method of Claim 8 further comprises, when the device is a harddrive, controlling the harddrive based on the temperature of the harddrive.

11. (Currently Amended) The method of Claim 1, that further comprises:

multiplexing the programmable current to a plurality of temperature dependent resistive devices coupled to a plurality of off-chip and/or on-chip devices;

measuring a voltage associated with each of the plurality of temperature dependent resistive ~~device~~ components coupled to the plurality of off-chip and/or on-chip devices;

converting each temperature-dependant voltage to a digital value; and

equating each digital value to the temperature of each of the plurality of off-chip and/or on-chip devices.

12. (Currently Amended) A digital thermometer to measure a temperature of an off-chip device that comprises:

an on-chip programmable current source to provide a current output;

an analog-to-digital converter operably coupled to sample a temperature-dependent voltage output produced by a temperature dependent resistive ~~device~~ component and the current output and convert the temperature-dependent voltage output to a digital value; and

a processing module that receives the digital value and equates the digital value to the temperature of the off-chip device.

13. (Original) The digital thermometer of Claim 12, wherein the processing module directs the on-chip programmable current source to:

increase the current output if the digital value decreases below a lower threshold value; and

decrease the current output if the digital value increases above an upper threshold value.

14. (Original) The digital thermometer of Claim 12, wherein the analog-to-digital converter comprises a comparator.

15. (Original) The digital thermometer of Claim 12, wherein the processing module auto-ranges the on-chip programmable current source so that the current output produces the temperature-dependent voltage output within a predetermined range.

16. (Original) The digital thermometer of Claim 12, that further comprises:

a multiplexer that multiplexes the current output to a plurality of temperature dependent resistive devices coupled to a plurality of off-chip and/or on-chip devices; and

a demultiplexer that demultiplexes a plurality of temperature-dependant voltages to the analog-to-digital converter,

wherein the analog-to-digital converter converts each temperature-dependant voltage to a digital value; and

wherein the processing module equates each digital value to the temperature of each of the plurality of off-chip and/or on-chip devices.

17. (Currently Amended) The digital thermometer of Claim 12, wherein the temperature dependent resistive ~~device~~ component comprises a thermistor.

18. (Original) The digital thermometer of Claim 12, wherein the processing module equates the digital value to the temperature of the off-chip device with a table relating digital values to temperatures.

19. (Currently Amended) The digital thermometer of Claim 12, wherein the processing module equates the digital value to the temperature of the off-chip device by calculating the temperature of the off-chip device with a predetermined function wherein the temperature is a function of:

a current supplied by the on-chip current source;

a digitized voltage; and

a set of physical properties that define the temperature dependent resistive ~~device~~ component.

20. (Currently Amended) The digital thermometer of Claim ~~12~~ 19, wherein:

the temperature dependent resistive ~~device~~ component comprises a thermistor; and

the predetermined function comprises the equation:

Temp=[1/((ln(Index/(16*Ro))/Beta)+0.00336)]-273

wherein:

Temp is the Temperature of the Off-Chip Device in Celsius;

Index is a digital value derived from the digitized voltage and the programmable current;

Ro is a resistance of the thermistor in KILOOHMS at 298K; and

Beta is a thermistor value.

21. (Original) The digital thermometer of Claim 12, wherein the off-chip device comprises a hard drive.

22. (Original) The digital thermometer of Claim 12, wherein the off-chip device comprises a battery.

23. (Original) The digital thermometer of Claim 12, wherein the processing module controls a function of the off-chip device based on the temperature of the off-chip device.

24. (Original) The digital thermometer of Claim 12, is located on an audio processing chip.

25. (Currently Amended) An audio processing chip, having a digital thermometer located thereon to measure a temperature of an off-chip device, that comprises:

an on-chip programmable current source to provide a current output;

a temperature dependent resistive ~~device~~ component thermally coupled to the off-chip device, that receives the current output to produce a temperature-dependent voltage output;

an analog-to-digital converter to sample the temperature-dependent voltage output and convert the temperature-dependent voltage output to a digital value; and

a processing module that receives the digital value and equates the digital value to the temperature of the off-chip device.

26. (Original) The audio processing chip of Claim 25, wherein the processing module directs the on-chip programmable current source to:

increase the current output if the digital value decreases below a lower threshold value; and

decrease the current output if the digital value increases above an upper threshold value.

27. (Original) The audio processing chip of Claim 25, wherein the analog-to-digital converter comprises a comparator.

28. (Original) The audio processing chip of Claim 25, wherein the processing module auto-ranges the on-chip programmable current source so that the current output produces the temperature-dependent voltage output within a predetermined range.

29. (Currently Amended) The audio processing chip of Claim 25, that further comprises:

a multiplexer that multiplexes the current output to a plurality of temperature dependent resistive ~~device~~ components coupled to a plurality of off-chip and/or on-chip devices; and

a demultiplexer that demultiplexes a plurality of temperature-dependant voltages to the analog-to-digital converter,

wherein the analog-to-digital converter converts each temperature-dependant voltage to a digital value; and

wherein the processing module equates each digital value to the temperature of each of the plurality of off-chip and/or on-chip devices.

30. (Currently Amended) The audio processing chip of Claim 25, wherein the temperature dependent resistive ~~device~~ component comprises a thermistor.

31. (Original) The audio processing chip of Claim 25, wherein the processing module equates the digital value to the temperature of the off-chip device with a table relating digital values to temperatures.

32. (Currently Amended) The audio processing chip of Claim 25, wherein the processing module equates the digital value to the temperature of the off-chip device by calculating the temperature of the off-chip device with a predetermined function wherein the temperature is a function of:

a current supplied by the on-chip current source;

a digitized voltage; and

a set of physical properties that define the temperature dependent resistive ~~device~~ component.

33. (Currently Amended) The audio processing chip of Claim ~~25~~ 32, wherein:

the temperature dependent resistive ~~device~~ component comprises a thermistor; and

the predetermined function comprises the equation:

Temp=[1/((ln(Index/(16*Ro))/Beta)+0.00336)]-273

wherein:

Temp is the Temperature of the Off-Chip Device in Celsius;

Index is a digital value derived from the digitized voltage and the programmable current;

Ro is a resistance of the thermistor in KILOOHMS at 298K; and

Beta is a thermistor value.

34. (Original) The audio processing chip of Claim 25, wherein the off-chip device comprises a hard drive.

35. (Original) The audio processing chip of Claim 25, wherein the off-chip device comprises a battery.

36. (Original) The audio processing chip of Claim 25, wherein the processing module controls a function of the off-chip device based on the temperature of the off-chip device.